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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/799,973      | 03/12/2004  | Gregg W. Frey        | 2003P18354US        | 9035             |

7590 11/28/2006

Siemens Corporation  
Intellectual Property Department  
170 Wood Avenue South  
Iselin, NJ 08830

EXAMINER

JAWORSKI, FRANCIS J

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

3768

DATE MAILED: 11/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/799,973

Applicant(s)

FREY ET AL.

Examiner

Jaworski Francis J.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 - 31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 - 31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/12/04</u> .   | 6) <input type="checkbox"/> Other: _____                          |

### ***Specification***

The disclosure is objected to because of the following informalities: the status of the PGPub citation para [0004] should be updated to reflect maturation of US65462650.

Appropriate correction is required.

***Claim Rejections - 35 USC § 102/103***The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1 – 3, 6 – 10, 17 - 19 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Daft et al (US7087023). Under the anticipatory interpretation Daft et al teaches in Figs. 2 and 3 an interconnection scheme in which the electrode leads are embedded within the substrate ( relying on 'substrate' as defined by applicants para [0028, end-portion, which definition appears to parallel the Wikipedia printed circuit board (PCB) definition of substrate as embracing an associated insulating layer, or alternatively relying on col. 1 lines 43 – 45 where at least one electrode is stated to be 'contained by the substrate) and connected together so as to form an elevational fresnel lens equivalent. Elsewhere in col. 7 lines 40 – 53 it is stated that the active circuitry associated with which scheme can be put wherever one wants to put the circuitry, in relation to the immediate substrate of the cMUT array.

Under the '103(a) interpretation if the four corners of Daft et al document be considered deficient regarding inherently teaching that the electrode interconnections be within the substrate, then it would have been inherently obvious to do so since in the case where the active circuitry is within the substrate the electrode leads to it must so be located, and if the col. 1 teaching pertain to ground electrode situating within a substrate, an interconnection may be a plating akin to a ground electrode and so located. Alternately stated, the examiner is considering that the aforementioned two teaching portions establish the situating of electrodes within the substrate for the cMUT

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or (plank-type) membrane array. Pad connections would be inherently obvious where the active circuitry is apart from the substrate proper, and the interconnections must necessarily cross an edge where a separate substrate or die is edge-apposed to the cMUT array and its substrate.

Claims 1 – 3, 6 - 10 are further rejected under 35 U.S.C. 103(a) as being unpatentable over Ladabaum (US6562650) in view of Daft et al. Since the former teaches that at least some of the electrodes of the cMUT may be contained within the substrate along with active circuitry, it would have been obvious in view of the col. 7 passage of the latter to concomitantly move the active circuitry out of the immediate substrate while otherwise interconnecting the substrate-housed electrodes in order to provide elevational focusing. [ Alternately stated, the Examiner is effectively arguing that the art had recently advanced beyond the spec para [0004] characterization using Ladabaum.]

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Daft et al or Ladabaum in view of Daft et al as applied to claim 3 above, and further in view of Baumgartner et al (US6831394). Whereas the former do not mention flex circuit use, it would have been obvious in view of the latter to incorporate same. To the extent that Baumgartner et al also teaches embedding an electrode within the cMUT substrate per col. 4 lines 59 – 60, this is considered to additionally evidence the obviousness of that feature.

Claims 5 and 11, 13 - 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claim 3 above, and further in view of

Dreschel et al (US6773401) insofar as the latter evidences that wrap-around connections were heretofore used in association with cMUT arrays. The insulation layers in Daft et al would be understood to include polymer materials.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claim 11 above, and further in view of Sumanaweera et al (US6359367) since the latter additionally notes that polymer material deposited on the substrate may provide an isolation function between cMUT array elements.

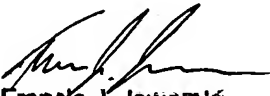
Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claim 17 above, and further in view of Baumgartner et al since the latter teaches that wire bonding would have been a well-known for making circuit connections for such a device.

Claims 21 – 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daft et al or Ladabaum in view of Daft et al as applied to claim 3 above, alone or further in view of Sumanaweera et al. In daft et al the use of a polymer material for an insulator as part of the substrate would have been well-known since polymers of non-conducting type may serve as insulators. Alternatively Sumanaweera et al taught that polymer materials could serve as isolating material between cMUT elements.

Any inquiry concerning this communication should be directed to Jaworski Francis J. at telephone number 571-272-4738.

FJJ:fjj

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Francis J. Jaworski  
Primary Examiner